Scientists here find gene that causes blindness in kids

It all began with SNEC training mission to Myanmar sponsored under the Singapore Volunteers Overseas Programme of the Singapore International Foundation in 2004. During the week-long event at the Yangon Eye Hospital, Professor Donald Tan, Deputy Director, SNEC and Director, SERI performed a cornea graft on a 12-year-old blind boy who came to seek help for his condition known as congenital hereditary endothelial dystrophy (CHED). It was discovered he had three other blind siblings with the same rare disease.

CHED is a blinding disorder in children characterized by the opacification of the cornea, the outer clear layer of the eye. This condition is particularly distressing as it affects very young children and such children require cornea graft to save their vision.

This started an exciting genetic study led by clinician-scientist Associate Professor Aung Tin of the Singapore National Eye Centre and geneticiest Dr Eranga Wijthana of the Singapore Eye Research Institute who successfully identified a new eye disease gene, SLC4A11. The gene, SLC4A11 codes for a transporter protein required for cell growth and proliferation. Mutations in the identified gene SLC4A11 causes CHED.

This identification of gene started with examination of blood samples of the four Myanmar siblings. Genetic studies were then carried out in several affected families from different parts of Asia. In fact, it is one of the first genes to be identified through collaborative efforts between several research institutes from Asia in India, Britain and Canada.

This is made possible by the strong links that SNEC has established with regional and international research centres worldwide.

Results of this research were published in the July issue of Nature Genetics. With an impact factor of 26.494, Nature Genetics is ranked first of the 120 journals in the field of genetics and heredity and publishes the very highest quality research in genetics.

The discovery of the gene linked to a particular disease makes it possible to identify and treat the disease early and the identification of loss-of-function mutations in the gene underlying CHED could facilitate gene replacement therapy in this most accessible part of the eye.

Partners involved in this multicenter study with SNEC / SERI are:
- Department of Ophthalmology, Yong Soo Lin School of Medicine, National University of Singapore
- Department of Physiology, University of Alberta, Canada
- Aravind Medical Research Foundation, Madurai, India
- Institute of Ophthalmology, University College London, UK
- Section of Ophthalmology and Neurosciences, Leeds Institute of Molecular Medicine, St James’s University Hospital, Leeds, UK
- Eye Department, St James’s University Hospital, Leeds Teaching Hospitals NHS Trust, Leeds, UK
- Yangon Eye Hospital, Yangon, Myanmar
- Department of Pathology, National University of Singapore
- Institute of Molecular and Cell Biology, Singapore
- Department of Biochemistry, University of Alberta, Canada

Partner for Phase 2 study:
- Sankara Nathralaya, Chennai, India
Eye surgeons get 3-D HDTV view of operations

In the largest gathering of over 1,500 ophthalmologists from more than 25 countries, participants viewed 3D-HD (3 Dimension-High Definition) Live Eye Surgeries transmitted from the SNEC Operating Theatre while seated in the auditorium at the Suntec International Convention & Exhibition Centre. The ophthalmologists were in Singapore to attend the joint programme of the Asia Pacific Academy of Ophthalmology (APAO) and the Asia Pacific Association of Cataract and Refractive Surgeons (APACRS) held from 10 to 14 June 2006. The SNEC operating theatre was capably equipped with special 3D cameras, encoding and decoding equipment to transmit live surgeries in 3D-HD format.

Prof Akitoshi Yoshida, Chairman, Department of Ophthalmology, Asahikawa Medical College, Japan and Clin A/Prof Ong Sze Guan, Senior Consultant and Head, Training and Education, SNEC demonstrated posterior and anterior segment eye surgery respectively. The two institutions are the principal investigators of this new technology experimentation.

This state-of-the-art telemedicine in ophthalmology contributed towards establishing Singapore as the international hub for global info-communications.

Mr Rahul Gandhi visits the SNEC

The SNEC is honoured to host Mr Rahul Gandhi, Member of Parliament, Congress Party, Republic of India and son of the late Indian Prime Minister Mr Rajiv Gandhi and Congress Party President Mrs Sonia Gandhi at our Centre on 8 June 2006 during his visit to Singapore from 5 to 11 June 2006.

Mr Gandhi is passionately committed to eradicating preventable blindness back in India setting up an eye hospital in his constituency Lok Sabha in early 2006.

During his trip to Singapore, Mr Rahul Gandhi also visited the Changi Airport, Singapore Management University, the Port of Singapore Authority, Singapore Airlines, Keppel Corporation, Creative Technologies and SingTel to understand the operations of these business enterprises.
The Ophthalmological Communities of ASEAN and Europe See Eye to Eye in the Development of Ophthalmology

On 30 August 2006, the ASEAN Association of Eye Hospitals (AAEH) and the European Association of Eye Hospitals (EAEH) signed a Memorandum of Understanding (MOU) to collaborate in areas of education, research and activities that bring about the advancement of ophthalmology, vision sciences, eye care and the management of eye hospitals and eye centres. The MOU signing ceremony is held in conjunction with the 20th Anniversary Celebrations International Scientific Meeting of the Tun Hussein Onn National Eye Hospital held in Kuala Lumpur. The coming together of the AAEH and EAEH for the purpose of seeking common denominators in ophthalmology is significant. ASEAN or Association of South East Asian Nations, a regional grouping comprising Indonesia, Malaysia, The Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar and Cambodia, represents a total population of about 500 million. Europe, one of the six continents in the world, consists of twenty-five countries with a total population of about 450 million. This union will undoubtedly bring the development of ophthalmology to greater heights.

Members of the ASEAN Association of Eye Hospital visited the Tun Hussein Onn National Eye Hospital, Kuala Lumpur, Malaysia to join in its 20th Anniversary Celebrations

Members of ASEAN Association of Eye Hospitals (AAEH)
- American Eye Hospital, The Philippines
- Jakarta Eye Centre, Indonesia
- Rutnin Eye Hospital, Thailand
- Singapore National Eye Centre, Singapore
- The Royal Victoria Eye and Eye Hospital, Australia
- Tun Hussein Onn National Eye Hospital, Malaysia
- Yangon Eye Hospital, Myanmar

Members of European Association of Eye Hospitals (EAEH)
- Le Centre Hospitalier National d’Ophtalmologie des Quinze Vingts, France
- Moorfields Eye Hospital, England
- Singapore National Eye Centre, Singapore
- St Eriks Eye Hospital, Sweden
- The Rotterdam Eye Hospital, The Netherlands
- The Royal Victoria Eye and Ear Hospital, Australia
- University of Helsinki, Department of Ophthalmology, Finland
- University of Leuven, Belgium
- VISSUM Instituto Oftalmologico de Alicante, Spain
- 37 Military Hospital, Ghana
SINGAPORE EYE RESEARCH INSTITUTE

11th International Myopia Conference
Renowned Ophthalmologists around the World congregate to discuss Myopia

The Singapore Eye Research Institute (SERI) hosted the 11th International Myopia Conference held in Singapore from 16 to 18 August 2006. The conference is dedicated to the late Associate Professor Chew Sek Jin, the first Director of SERI and a pioneer in myopia research work in Singapore.

Held biennially, the conference serves as a platform for eminent ophthalmologists, research scientists and optometrists to present and discuss the latest ground-breaking findings in research related to myopia. Myopia is reaching epidemic proportions in East Asian cities and Singapore has one of the highest rates of myopia in the world.

Over the next three years, SERI along with NUS will be embarking on a new study involving 3,000 youngsters ranging from six months to six years of age to examine their genetic make-up and environment to find out why one in four children is shortsighted. This will be the second study undertaken jointly by the two institutions. The earlier Singapore Cohort Study of Risk Factors for Myopia (SCORM) conducted by SERI since 1999 looking at 2,000 children between seven and nine, found that one in four children in Singapore developed myopia by age seven. The SCORM study plans to continue to track the group of children until they are adults.

The 11th International Myopia Conference was co-organised with the NUS, DSO National Laboratories, Alexandra Hospital, Health Promotion Board, Singapore Polytechnic and the SNEC.
SERI to host
2007 Asia-ARVO Meeting
2 to 5 March 2007, Singapore

The Singapore Eye Research Institute (SERI) will host the first Asia-ARVO (Association for Research in Vision and Ophthalmology) Meeting in 2007, a biennial meeting inaugurated to be held in locations throughout Asia to highlight the important clinical and translational aspects of vision and ophthalmic research. Previously known as SERI-ARVO and held in Singapore successfully in 2003 and 2005, the meeting has been renamed Asia-ARVO to reflect ARVO’s commitment to partnering with the many countries in Asia in expanding research programmes.

The Late Associate Professor Chew Sek Jin
In Memoriam

The late Associate Professor Chew Sek Jin was Singapore National Eye Centre’s first MD, PhD. Upon achieving his PhD degree in Neuroscience from the Rockefeller University, USA in 1996, he returned and immediately set to work in getting the Singapore Eye Research Institute (SERI) underway. He worked unceasingly to secure grants and set up the then SERI laboratories in NUS premises with a team of researchers and support staff. He also started myopia research clinics, establishing successful clinical trials which have carried on till today.

Associate Prof Chew Sek Jin died of an inoperable brain tumour on 19 December 1998 at age 39. He is remembered fondly by all who knew him for his fearless courage, boundless optimism, total devotion to his work and his genuine friendship and concern.

- For more information on the 2007 Asia-ARVO Meeting, please visit www.seri.com.sg
Advances In Cornea and Ocular Surface Transplantation

This article is contributed by

**DR LEONARD ANG PEK KIANG**
MBBS, FRCS(Ed), MRCoPhth(Lond), M.Med(Phth)
Assistant Professor
Consultant, Corneal and External Eye Disease Service

Cornea disease is a major cause of morbidity and blindness in the world. Severe ocular surface diseases are devastating conditions that may result in limbal stem cell deficiency, corneal scarring and severe visual loss. Recent advances in the treatment of cornea and ocular surface disorders, using bioengineered ocular surface equivalents and improved keratoprosthesis devices, have allowed SNEC to more effectively and more safely treat patients with a wide variety of eye diseases, where conventional corneal transplantation has had limited success.

**Advances In Ocular Surface Transplantation**
The following recent advances have improved SNEC’s ability to treat severe ocular surface diseases arising from conditions such as Stevens-Johnson’s syndrome, ocular cicatrical pemphigoid and chemical injury.

**Cultivated corneal stem cell transplantation**
Cultivated corneal stem cell transplantation has recently been shown to be a promising treatment modality for severe ocular surface disease. Using ex vivo expansion techniques, stem cells may be harvested from the patient’s non-diseased contralateral eye or from donor tissue and cultured in the laboratory to form a large corneal epithelial sheet that is transplanted onto the diseased eye to regenerate the corneal surface. Using the patient’s own tissue minimizes injury to the donor eye, and reduces the risk of infection and graft rejection.

**Cultivated oral epithelial transplantation**
Another promising treatment is the use of autologous cultivated oral epithelial transplantation. Utilizing the patient’s own oral tissue overcomes problems related to allogeneic transplantation, and is particularly useful for treating severe bilateral conditions (Fig 2).

Initial results of this procedure have been encouraging, with many patients achieving ocular surface stability and improvement in vision. We have recently also demonstrated the effective use of autologous serum-derived cultivated oral transplantation for the treatment of severe limbal stem cell deficiency, bringing us one step closer towards developing safer, xenobiotic-free autologous bioengineered tissues for clinical transplantation.

**Fig 2.** Cultivated oral epithelial transplantation for ocular cicatrical pemphigoid. (A) Preoperative and (B) postoperative appearance.
In the largest gathering of over 1,500 ophthalmologists from more than 25 countries, participants viewed 3D-HD (3 Dimension-High Definition) Live Eye Surgeries transmitted from the SNEC Operating Theatre while seated in the auditorium at the Suntec International Convention & Exhibition Centre. The ophthalmologists were in Singapore to attend the conjoint programme of the Asia Pacific Academy of Ophthalmology (APAO) and the Asia Pacific Association of Cataract and Refractive Surgeons (APACRS) held from 10 to 14 June 2006. The SNEC operating theatre was capably equipped with special 3D cameras, encoding and decoding equipment to transmit live surgeries in 3D-HD format.

Prof Akitoshi Yoshida, Chairman, Department of Ophthalmology, Asahikawa Medical College, Japan and Clin A/Prof Ong Sze Guan, Senior Consultant and Head, Training and Education, SNEC demonstrated posterior and anterior segment eye surgery respectively. The two institutions are the principal investigators of this new technology experimentation.

This state-of-the-art telemedicine in ophthalmology contributed towards establishing Singapore as the international hub for global info-communications.

Mr Rahul Gandhi visits the SNEC

The SNEC is honoured to host Mr Rahul Gandhi, Member of Parliament, Congress Party, Republic of India and son of the late Indian Prime Minister Mr Rajiv Gandhi and Congress Party President Mrs Sonia Gandhi at our Centre on 8 June 2006 during his visit to Singapore from 5 to 11 June 2006.

Mr Gandhi is passionately committed to eradicating preventable blindness back in India setting up an eye hospital in his constituency Lok Sabha in early 2006.

During his trip to Singapore, Mr Rahul Gandhi also visited the Changi Airport, Singapore Management University, the Port of Singapore Authority, Singapore Airlines, Keppel Corporation, Creative Technologies and SingTel to understand the operations of these business enterprises.
Team led by SNEC honoured with First Minister for Health Award

The team comprising ophthalmologists led by Professor Donald Tan, Deputy Director, Singapore National Eye Centre (SNEC) who spotted the outbreak of fusarium keratitis and epidemiologists from Ministry of Health (MOH) whose findings suggested a strong link between the potentially blinding fungal infection with Bausch & Lomb’s ReNu MoistureLoc multipurpose contact lens solution, received the first Minister for Health Award from Mr Khaw Boon Wan on 10 July 2006.

The Ministry of Health issued its first public alert on 17 February 2006. This and subsequent public alerts reverberated beyond Singapore, leading eventually to the worldwide recall of Bausch & Lomb’s ReNu MoistureLoc multipurpose contact lens solution on 15 May 2006.

Mr Khaw Boon Wan applauded the SNEC’s clinicians for their vigilance. Their tireless effort in getting to the bottom of the surge in fusarium keratitis fungal infection saved the sights of many contact lens users around the world.

Minister for Health, Mr Khaw Boon Wan (5th from left) with the vigilant team of ophthalmologists and epidemiologists and grateful patients (first three from left).

The first Minister for Health Award also went to a group comprising doctors, nurses and other healthcare professionals from the public, private and civic sector who responded to the call for humanitarian relief operation following the Jogyakarta earthquake of 27 May 2006. They were among the first to lend a hand at the affected areas.

“...You have made us proud. You have made a difference to the lives of the people you touch locally as well as those overseas. To each of you, I salute you...”

Health Minister Khaw Boon Wan, applauding the winners of the first Minister for Health Award.
SNEC bags Work-Life Excellence Award 2006

The Singapore National Eye Centre took home the Work-Life Excellence Award 2006 conferred by the Tripartite Committee on Work-Life Strategy in the Award Presentation Ceremony held on 28 July 2006 at the Shangri-La Hotel.

The biennial Work-Life Excellence Award pays tribute to organizations that are committed to helping their employees harmonise work and personal needs. The award emphasizes the benefits of integrating Work-Life with business strategy so companies can optimize their productivity through better performing workers motivated by effective Work-Life initiatives. A key criterion for the award is whether companies ‘walk the talk’ and implement relevant programmes that meet both business goals and employee needs.

In previous years, the Award was known as the Singapore Family Friendly Employer Award. The SNEC was also recipient of the Singapore Family Friendly Employer Award in 2004.

Successful completion of the inaugural Advanced Diploma in Optometry course

Singapore Polytechnic and the Singapore National Eye Centre (SNEC) celebrated their partnership in the successful completion of the inaugural Advanced Diploma in Optometry Course on 27 July 2006.

First launched in July 2004, the two-year part-time Advanced Diploma in Optometry Course was started in recognition of the need to upgrade the level of technical skills and knowledge of qualified optometrists to meet the challenges within the ever-changing optical and eye care industries.

The SNEC provided the clinical campus for the teaching by our ophthalmologists in the detection and diagnosis of eye conditions, techniques to refract and manage children, specialized contact lens fitting as well as the prescription of low vision aids to patients with visual disability.
President's Challenge Health Relay 185
Running round-the-clock in the name of Charity

Along with close to 200 Singapore’s healthcare professionals, our SNEC runners chipped in to complete the round-the-clock 185km relay run organised by Singapore Health Services (SingHealth) in support of the President’s Challenge 2006.

The route covered the perimeter of Singapore and is divided into 18 legs of 10km each. The grueling run began at 9.00am on 22 July 2006 ending with a 3.1km Mass Walk-A-Jog on 23 July 2006 led by the Minister for Health, Mr Khaw Boon Wan, joined by the Minister of State (Health), Mr Heng Chee How, together with another 1,000 runners from various healthcare organizations across the island.

Through our Eyes of Love

The Eyes of Love project launched to all SNEC staff on 20 July 2006 is one of the Centre’s major commitments to doing its part for the community. In line with the launch, SNEC became the first corporate charity of the Care Corner Family Service Centre (Queenstown).

Set up in 1994, the Care Corner Family Service Centre is a voluntary welfare organization affiliated with the National Council of Social Service. The Centre is committed to building resilience in families and individuals in times of crisis and difficulties and expanding their resources and coping abilities.

For more information on the Care Corner Family Service Centre, please visit http://www.carecorner.org.sg
Celebrating the

**singlasik™**

experience at

**Singapore National Eye Centre**

35,000 procedures and counting

Life's Looking Great

With the recent expansion of the Refractive Surgery Centre at the Singapore National Eye Centre (SNEC), singlasik™ was launched.

singlasik™ is the total quality experience that patients enjoy with LASIK at the SNEC.

Far more than just a LASIK procedure, the singlasik™ experience at the Singapore National Eye Centre is distinguished by personalized assessment and counseling, high-precision LASIK surgery backed up by a faculty of more than 10 senior eye surgeons with a combined track record of more than 35,000 cases since 1992 and 100% clinical audit.

Every step of the way, patients receive total quality care from a team of highly dedicated and specialized staff.

Singlasik Centre  
Tel : +65 6227 7266 (Appointments)  
     +65 6322 8891 (Enquiries)  
Fax : +65 6226 3403  
Email : vision2020@snecc.com.sg
For Ophthalmologists

Updates in Neuro-Ophthalmology
This course provides an update including recent advances in the practice of neuro-ophthalmology. Problem clinical cases will be presented and discussed with interactive audience participation.

COURSE DIRECTOR  Dr. Sharon TOW
Head and Consultant, Neuro-Ophthalmology Service, SNEC

DATE  Saturday, 28 October 2006
VENUE  SNEC Auditorium, Level 4, Tower Block

Ocular Manifestations of Systemic Disease
With participation of the Department of Ophthalmology, Yong Loo Lin School of Medicine, NUS
This is a refresher course for general ophthalmologists and will be useful for internists and general practitioners. The ocular manifestations in diseases such as metabolic disease, rheumatological disease, systemic infections and vascular disease will be presented and discussed.

COURSE DIRECTOR  Assoc Prof CHEE Soon Phaik
Head and Senior Consultant, Ocular Inflammation and Immunology Service, SNEC

DATE  Saturday, 4 November 2006
VENUE  SNEC Auditorium, Level 4, Tower Block

For Family Physicians

LASIK and Aesthetic Eyelid Surgery
The latest in refractive surgery will be discussed. Surgical and non-surgical techniques for correcting eye bags will also be presented.

COURSE DIRECTORS  Dr. CHAN Wing Kwong
Head and Senior Consultant, Refractive Surgery Service, SNEC
Dr. CHOO Chai Teck
Head and Senior Consultant, Ophthalmic Plastic / Aesthetic Service, SNEC

DATE  Saturday, 7 October 2006
VENUE  SNEC Auditorium, Level 4, Tower Block

Annual Seminar

Infection Control Seminar 2006
Designed for medical, nursing and paramedical staff, this annual seminar is organised by the Infection Control Committee of SNEC to highlight the importance of infection control and infection surveillance in a tertiary eye centre. SNEC prides itself on its low postoperative infection rates and the aim of this seminar is to promote continued awareness of minimizing the risk of postoperative infection among all medical and nursing staff.

The correct techniques of hand washing, gowns, instrument handling and maintaining strict operating theatre sterility will be emphasized. Prophylactic measures undertaken by the ophthalmic surgeon to prevent postoperative endophthalmitis will also be discussed.

COURSE DIRECTORS  Dr. CHAN Tat Keong
Chairman, Infection Control Committee, Consultant, Cataract and Comprehensive Ophthalmology Service, SNEC

DATE  Saturday, 25 November 2006
VENUE  SNEC Auditorium, Level 4, Tower Block

For more information on these events, please visit our website www.snecc.com.sg or send an email to meet@snecc.com.sg

For Optometrists, Opticians and Orthoptists

Glaucoma Update for Optometrists and Opticians
The course aims to update optometrists and opticians on methods of glaucoma detection and diagnosis. The three main topics are the Van Herrick procedure for detection of shallow anterior chamber, assessment of visual fields and new glaucoma imaging technologies for evaluating the optic nerve and retinal nerve fibre layer. The session will include case discussions to illustrate the methods used.

COURSE DIRECTOR  Dr. Francis OEN
Head and Senior Consultant, Glaucoma Service, SNEC

DATE  Wednesday, 14 October 2006
VENUE  SNEC Auditorium, Level 4, Tower Block